Periodical WP

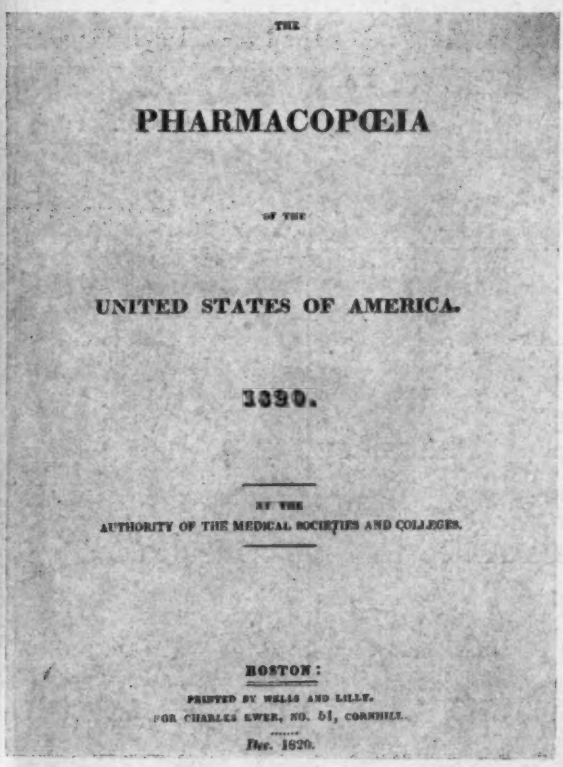
PUBLIC LIBRARY
APR 7 - 1941
DETROIT

AMERICAN JOURNAL OF PHARMACY

and

THE SCIENCES SUPPORTING PUBLIC HEALTH

SINCE 1825



THE

PHARMACOPŒIA

OF THE

UNITED STATES OF AMERICA.

1820.

BY THE

AUTHORITY OF THE MEDICAL SOCIETIES AND COLLEGES.

BOSTON:

PRINTED BY WELLS AND LILLY.

FOR CHARLES EWER, NO. 51, CORNHILL.

Dec. 1820.

THE TITLE PAGE OF THE FIRST PHARMACOPOEIA

Revision then was slow — today ad interim revision keeps it in step with the needs of pharmacy and medicine. See p. 117

MARCH
1941

BACTERIOLOGY

BIOLOGY

CHEMISTRY

PHARMACY

1821 - 1941

One Hundred Twenty Years
of
Education
in
Pharmacy
and the
Sciences Allied to Public Health

Write for Catalog J

Philadelphia College of Pharmacy and Science

43rd Street, Kingsessing and Woodland Avenues

Philadelphia Pennsylvania

AMERICAN JOURNAL OF PHARMACY

AND THE SCIENCES SUPPORTING PUBLIC HEALTH

Since 1825

IVOR GRIFFITH, P. D., Ph. M., D. Sc., F. R. S. A., Editor
Linwood F. Tice, M. Sc., Assistant to the Editor
John E. Kramer, B. Sc., Business Manager

COMMITTEE ON PUBLICATION

E. Fullerton Cook, P. D., Ph. M., M. S., Chairman.
Mitchell Bernstein, P. D., M. D., F. A. C. P. Louis Gershenfeld, P. D., Ph. M., D. Sc.
Joseph W. E Harrisson, P. D., Ph. M. John K. Thum, Ph. G., Ph. M.
J. W. Sturmer, Phar. D., Ph. M., D. Sc., Secretary

Vol. 113. MARCH, 1941 No. 3

CONTENTS

Editorials:

Cream of the Crop 86

An Important Contribution to the Retail Pharmacist by Organized Pharmacy 88

Articles:

Significance of Hydrogen-ion Concentration in the Evaluation of the Bactericidal Efficiency of Surface Tension Depressants. By Louis Gershenfeld and David Perlstein 90

A General Discussion of Proximate Assays. By F. O. Taylor 93

Animal and Reptile Holder. By Philip Schain 100

Extension of U. S. P. Use in Pan-American Countries. By Amelia de Mesa Ponce 103

Founders' Day Address—Philadelphia College of Pharmacy and Science. By Henry Butler Allen 107

Our Contributors This Month 116

Recent Announcements by the Revision Committee of the United States Pharmacopœia 117

Selected Abstracts 120

Solid Extracts 126

Published monthly by the Philadelphia College of Pharmacy and Science
43rd Street, Kingsessing and Woodland Avenues, Philadelphia, Pa.

Annual Subscription, $3.00 Foreign Postage, 25 Cents Extra
Single Numbers, 30 Cents Back Numbers, 50 Cents

Entered as Second-Class Matter at the Post Office at Philadelphia, Pa., Under the Act of March 3, 1879

Acceptance for Mailing at Special Rate of Postage Provided for in Section 1103 Act of October 3, 1917. Authorized February 15, 1920

EDITORIAL

On these pages the editor offers his opinions, unshackled by advertising patrons and unrestrained by anything save a sense of the decent and the truthful. The editor, alone, is responsible for their type, their tone and their tenor.

CREAM OF THE CROP

COLLEGES of pharmacy have recently been sharply criticized for aiding and abetting diversion of their best students (cream of the crop) to fields other than retail pharmacy. The basis for such criticism may be justified, but it seems that the colleges can do very little about it. Involved in the whole picture are circumstances quite beyond the control of the academic authorities. For instance, there is the predilection of the graduate. If, with or without persuasion, he prefers affiliation with some phase of pharmaceutical manufacture, distribution and promotion, who is there to stop him, and why should anyone want to stop him? If a graduate recognizes in the modern trends of certain branches of retail pharmacy a condition or conditions not to his liking, who except himself has the right to seek for his life-work that which will bring him satisfaction and income? Pharmacy has changed and we have to change our mental lenses in accommodation so as to have a clear vision of the picture. Even the professional retail pharmacy is no longer the only habitat of the calling. Like many another calling, pharmacy has been claimed by the machine. Pills, once the sole monopoly of the corner drug laboratory, are now made by the millions. Plasters, once clumsily spread on a few square inches of cloth, are now machined by the mile. Capsules dozened by thumb and finger, and not too accurately, are now precisely milled and millioned. Elixirs, lotions, pastes and unguents, are no longer thimbleful things, but tanked and vatted in terms of unbelievable gallonage and tonnage. This is indeed the day of mass manufacture and by the same token the day of careful standardized production.

No one will deny the romance of the old apothecary shop. There was a divine aroma to it, and an atmosphere calm, austere and respected.

But if my heart—your heart—rebelled *today—this minute,* and the doctor asked for tinctured "digitalis" to correct it, would I or you prefer the honest but unstandardized tincture of the old apothe-

cary to the double, triple tested, honest and *standardized* tincture of modern large scale manufacture?

Of course not!!!

Mind you, these remarks are not in derogation of the corner pharmacy that functions in a full, facile, honorable and serviceable way. No indeed!! For there is a greater opportunity and a greater challenge today to the so-called, and not so unwisely called "professional pharmacy" than ever before.

It has a real service to perform and a service of professional caliber.

The pharmacy of today, the "real pharmacy", is represented, not by blatant price cutting, hardware and notion shops masquerading as pharmacies, but by the dignified, honest and professional pharmacy, chain or independent, as well as by the large manufacturing houses who involve into their diversified healing products an art, a science and an integrity that have made American medicinals dependable, responsible, and known for such attributes, the world over.

Is it any wonder that the modern graduate in pharmacy, a bachelor of science, more comprehensively and sensibly trained than scarcely any other four-year college graduate, is it any wonder that he insists upon a chance to realize upon and exercise his training, and upon a frank right to a decent return, financial and heart-pleasing, for his investment in education?

Certainly not!!

If he prefers the finely conducted pharmacy, or the hospital or else the manufacturing house, he is perfectly entitled to his choice.

IVOR GRIFFITH.

AN IMPORTANT CONTRIBUTION TO THE RETAIL PHARMACIST BY ORGANIZED PHARMACY

ONE of the most unfortunate facts with respect to the profession of pharmacy has been the failure of a representative number of retail pharmacists in this country to support the only organization that is so constituted as to raise both the status of pharmacy and bring to it the recognition it deserves.

If the American Pharmaceutical Association were to get this support by both membership and interest it would most certainly brighten the outlook for the future of Pharmacy. Never in the history of our profession has there been a greater period of flux than at present. Everyone knows this but few realize how really critical the situation has become. The trend away from self-medication toward proper and more scientific treatment has already frightened many pseudo-pharmacists, with a merchandizing mania, to attempt to realign their policies more toward the professional side.

Pharmacy today has a challenge, and if it does not meet this challenge nothing can save it from complete submersion. We are all familiar with the old but true adage "you can't stop progress." It applies equally as well to ourselves as to others.

One of the most frequently heard statements by retail pharmacists explaining their failure to become members of the American Pharmaceutical Association is that the Journal of this Association did not carry the kind of subject matter of interest to them. This was possibly true, in part, but with the coming of the Practical Pharmacy Edition this condition was remedied.

Beginning January 1st, 1941, the Practical Pharmacy Edition was placed under the able direction of Robert W. Rodman as editor, and he has achieved in his first number a most excellent copy. No longer has the retail pharmacist any reason for not supporting the association. The Practical Pharmacy Edition itself is well worth the annual membership fee and, for those interested in pharmaceutical research, the Scientific Edition, too, is not to be overlooked. Organized pharmacy is doing its best to help the profession. Will not all persons in pharmacy who are really interested in its future do their part?

L. F. TICE.

SIGNIFICANCE OF HYDROGEN-ION CONCENTRATION IN THE EVALUATION OF THE BACTERICIDAL EFFICIENCY OF SURFACE TENSION DEPRESSANTS

(A preliminary report on Aerosol OT)

By Louis Gershenfeld, D. Sc. and David Perlstein, M. Sc.

The hydrogen-ion concentration exerts a most profound influence on the efficiency of surface tension depressants as bactericidal or bacteriostatic agents. The authors in this preliminary report give figures illustrating the extent of this effect with one of the very common surface active substances.

CONSIDERABLE interest has been shown recently in organic compounds possessing properties of surface activity in aqueous systems. Although various types of so-called wetting agents have been on the market for many years, new industrial uses of a very diverse nature are constantly being presented for these compounds. Their almost universal applicability is based upon the contention that wherever water is used there is the possibility that "wetter" water will do the work more efficiently.

Reports by many workers concerning the *in vitro* bactericidal and bacteriostatic efficiencies of wetting agents have revealed variable findings and were completely negative in several instances. In our own laboratories, varied findings were obtained from time to time not only by different but also by the same workers who repeated their techniques at different occasions. These inconsistencies appeared to be due to factors other than that concerned with the personal error or technique of the individual worker.

Since the first studies in determining bactericidal efficiency, it has been recognized that the reaction and especially the presence of acidity is an important factor influencing the findings. Even the classical work of Pasteur (1879) contains suggestions as to the effects of acidity on bacterial growth. We have been conducting a thorough study of wetting agents, and have found that the pH of the aqueous solutions of these surface tension depressants is the first important basic factor to consider when using them as disinfectants or aids in disinfection. Inasmuch as Aerosol OT is said to possess a bactericidal efficiency, our first experiments were conducted with this surface tension depressant.

Experimental

The F. D. A. phenol coefficient technique was employed using the standard *Staphylococcus aureus* as the test organism at a temperature of 37 degrees C.

Theoretically, distilled water should have a pH of 7.0, but in practice this is not found to be the case. Over a period of one month the distilled water in our laboratory, collected as is commonly practiced, varied from pH 6.4 to pH 6.8 A 1:100 dilution of Aerosol OT dissolved in distilled water of pH 6.6 had a final pH of 6.4, and as the dilution was increased the pH varied and approached 6.6. Upon the addition of a 24 hour-old broth culture of *Staphylococcus aureus,* pH 6.8, the final pH of the mixture was again altered.

In view of these variabilities, the following carefully controlled experiment was conducted with a number of surface tension depressants. The findings as revealed with solutions of Aerosol OT are given.

The pH of the aqueous 1:100 stock solution of Aerosol OT, of the distilled water used to make the dilutions, and of the *Staphylococcus aureus* culture was adjusted to the desired value immediately prior to performing the test, so that the final mixture had a pH as reported in the table. Adjustments were made with N/1 or N/10 HCl or NaOH v. s. After the completion of the test, the pH of the mixture was checked (colorimetrically). The test was checked and rechecked with freshly prepared solutions on several occasions, so that the findings reported are the results of many tests.

Discussion

It is apparent from Table I that the different findings in the bactericidal or bacteriostatic efficiencies obtained by workers is probably due, if not altogether at least in part, to the difference in pH of the final mixtures of the detergent dilution under the varied conditions of the techniques employed.

Among several observations noted during our investigation, we found that when using heat to dissolve the Aerosol OT, the heated solution repeatedly revealed findings different from that obtained in unheated solutions. At first thought it would appear that the wetting agent decomposed, but the following experiment repeated several

TABLE I

AEROSOL OT

pH of the final mixture	7.0		6.8		6.6		6.4		6.2		6.0		5.0		4.0	
Time in minutes	5	10	5	10	5	10	5	10	5	10	5	10	5	10	5	10
Dilutions																
1:100	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−
1:200	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−
1:300	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−
1:400	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−
1:500	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−
1:600	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−
1:700	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−
1:800	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−
1:900	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−
1:1,000	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−
1:2,000	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−
1:3,000	+	+	+	+	+	+	+	−	−	−	−	−	−	−	−	−
1:4,000	+	+	+	+	+	+	+	+	+	−	−	−	−	−	−	−
1:5,000	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−	−
1:6,000	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−
1:7,000	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−
1:8,000	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−
1:9,000	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−
1:10,000	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−
1:15,000	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−
1:20,000	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−
1:25,000	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−
1:30,000	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−
1:35,000	+	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−
1:40,000	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	−
1:45,000	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−
1:55,000	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−
1:65,000	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−
1:75,000	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1:100,000	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Distilled water	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Phenol 1:70*	−	−
Phenol 1:80*	+	−
Phenol 1:90*	+	+

* Phenol pH unadjusted.
+ indicates growth.
— indicates no growth.

times proved that the change in pH of the distilled water used in preparing the solution was responsible for the different findings.

The 1:100 aqueous stock solution of Aerosol OT, having a pH of 6.4, was heated in a water bath at 100 degrees C for 15 minutes and then cooled rapidly. The pH after heating was 6.7. Dilutions of the heated solution were made and the F. D. A. phenol coefficient test was performed as above. After 48 hours of incubation, all transplants, including that from the 1:100 dilution, showed growth. This is identical with the findings obtained with unheated aqueous solutions the pH of which was 6.8 (Table I). Surface tension measurements made on the heated and unheated samples, using the DuNoüy tensiometer, revealed no significant difference.

The heated sample was adjusted to the various pH values as indicated in Table I and its bactericidal efficiency was determined using the same technique as used for the unheated sample. The bactericidal efficiency of the heated solution at the different pH adjustments revealed findings similar to that of the unheated sample and as recorded in Table I. Heating separately the distilled water and the 1:100 solution of Aerosol OT in the same batch of distilled water and determining the pH before and after heating at 100 degrees C, revealed that the change in pH after heating the Aerosol OT solution, as noted above, is due to the change in pH of the distilled water and not to a change in pH of the Aerosol OT.

Conclusion

The surface tension depressants so far studied (and in particular Aerosol OT, the findings of which are reported here) exert, *in vitro*, a marked increase in bactericidal efficiency with an increase in the H-ion concentration. Prior to adjustment a solution of the compound may not exert any bactericidal efficiency at all, due to its own pH, or the latter may be altered by the pH of the diluent, or of the culture, or that the pH of the final mixture whatever it may be is unsatisfactory for the wetting agent to display its effectiveness or greatest efficiency as a bactericidal agent.

The marked decrease in efficiency of a 1:100 aqueous solution of Aerosol OT heated to 100 degrees C for 15 minutes is due to the change in pH caused by driving off carbon dioxide while heating, and is not due to either chemical decomposition or a change in

surface tension. The pH change after heating to 100 degrees C is due to the distilled water.

It is therefore important, especially in the case of solutions of Aerosol OT, to note or approximate the pH of the final mixture if a bactericidal effect is desired. At or near the neutral point (pH 7.0 or pH 6.8) one per cent. or weaker solutions of Aerosol OT reveal that in *in vitro* these are ineffective as bactericidal agents. The following dilutions kill *Staphylococcus aureus* within five minutes at the pH noted: 1:2,000 at pH 6.6; 1:4,000 at pH 6.0; 1:30,000 at pH 5.0; and 1:40,000 at pH 4.0. Weaker dilutions in most instances are effective at the same pH if the ten minute period is noted.

Acknowledgment

We wish to thank Vera Milanick, B. S., for the able technical assistance rendered.

The A. Ph. A. Committee on Pharmaceutical Research announces the availability of certain limited funds for the establishment of research fellowships for the school year 1941-1942, and invite applications for these grants. The allowance in each case is usually from $300 to $400.

These grants are to be made by the Council of the A. Ph. A. on the recommendations of the Committee on Pharmaceutical Research. They are to be made on the following basis: (a) the extent which the award will serve to promote pharmaceutical research; (b) whether the work supplements the A. Ph. A. laboratory program; (c) the qualifications of those who will perform the work for which the award is made and the facilities of the laboratory where the research will be conducted; (d) preference will be given to applications wherein the award will supplement a contribution from the institution or laboratory in which the research will be conducted.

Application blanks can be obtained from the chairman of the Committee on Pharmaceutical Research (Francis E. Bibbins, R. R. 16, Box 728-B, Indianapolis, Indiana). These blanks with all details necessary to evaluate the projects must be returned to the Committee not later than May 15, 1941.

Announcements of the awards will be made early this summer.

A GENERAL DISCUSSION OF PROXIMATE ASSAYS*

By F. O. Taylor

The term "proximate assay" is well chosen and the author discusses some of the reasons for variable results when such processes are employed. The importance of co-operative study in the development of new or modified methods is stressed and the suggestion made that the Pharmacopœia use a system similar to that employed by the A. O. A. C. in publishing "Tentative Methods of Assay."

FOR the purposes of this discussion, two of the definitions and uses of the word "proximate" may be appropriately considered. First, there is the definition of "nearly correct," "next," and "nearest"; then the application of the term in the phrase "proximate principles," where reference is especially made to the constituents of plant drugs, themselves of more or less indefinite or unknown composition. In this classification as proximate principles we find the alkaloids, of more or less definite constitution; glucosides, sometimes of rather less definite composition; and the still more indefinite substances such as resins, oleoresins, oils and other miscellaneous types of medicinally active constituents.

"Proximate assays" may therefore be very appropriately defined as methods of assay which are nearly correct for the determination of medicinally active principles of more or less indefinite composition.

The purpose of such assays is to determine with a reasonable degree of accuracy the amount of such principles present in drugs and their pharmaceutical preparations and, by so doing, to promote reasonable uniformity of medicinal activity for the preparations of such drugs.

Practically, the entire development of this and other methods of standardization of drugs by means of particular methods of assay has been a product of the past sixty years. The U. S. Pharmacopœia, Fifth Revision, begun by authority of "The National Convention for Revising the Pharmacopœia" held in Washington in May of 1870, did not contain any methods of alkaloidal assay or similar types of proximate assays. The nearest approach to this was the appearance in this edition of an official method for the manufacture of morphine from opium and of quinine sulfate and cinchonine sulfate from cin-

*Presented at the Pre-Convention Conference of the United States Pharmacopœia, Washington, D. C.

chona, and the requirement that opium should yield at least 10 per cent. morphine by this process.

"The National Convention for Revising the Pharmacopœia" held in Washington in May, 1880, authorized the preparation of the Sixth Revision of the U. S. Pharmacopœia and in its statement of general principles to be followed included the following:

> "Processes for the preparation of morphia, quinia and the other alkaloids are to be omitted, but the articles 'opium' and 'cinchona' shall be accompanied by detailed processes of assays for the alkaloids, and the minimum percentage of total alkaloids to be required in cinchona and the minimum and maximum percentage of morphia in opium shall be prescribed in the Pharmacopœia."

In this revision of the Pharmacopœia only opium and cinchona were standardized, but none of their preparations carried methods of assay.

The Seventh Edition of the U. S. Pharmacopœia (1895) continued methods of assay for opium and cinchona and applied similar methods to seven of the preparations of these two drugs. With the appearance of the Eighth Revision in 1905, for the first time the Pharmacopœia began to considerably expand the number of preparations standardized by methods of proximate assay. In that edition there appeared such methods of standardization for eighteen drugs and thirty of their preparations, such as extracts, fluid extracts, and tinctures.

In more recent years the methods of assay developed have been numerous and varied, but the basic principles involved have not been greatly changed. Chiefly, the various chemical methods of alkaloidal assay are based upon the solubility or insolubility of alkaloids or their salts in different types of solvents. Since these active principles are usually present in relatively small amounts either in the drugs or their pharmaceutical preparations and are associated with a multitude of other vegetable or chemical substances, the problem of separating them quantitatively in a relatively pure form becomes extremely difficult and complex. Theoretically exact results are practically impossible of attainment, and it is a tribute to the capabilities of analytical chemists that the accuracy of assays now customarily expected is attainable.

Let us consider at least some of the factors that cause the variations in alkaloidal assays. The same factors will also be applicable in greater or less degree to proximate assays dealing with active principles other than alkaloids. In the first place, there is the variable and usually small proportion of the active principle in a drug or its preparation. Next, there is to be considered the solubility in aqueous solutions, whether neutral, alkaline, or acid, both of the active principles and the larger amount of inert substances present—the varying solubility of active principles in the same solvent, depending upon the proportionate amount of other substances present, either inert drug constituents or added chemical substances used in the course of the assay; the miscibility of solvents such as aqueous solutions, chloroform, ether, petroleum ether, and other solvents and their respective solubilities in each other; the proportionate solubility of the active principle in these different solvents; the variation in solubility with variations in temperature; the volatility both of solvents, of active principles, and of inert substances that may be associated with the active principles; the ease of decomposition, either in the presence or absence of solvents, by the action of heat, light or the effects of oxidation by the air, and the completeness of chemical reactions involved in many cases.

A theoretically exact method of assay would enable the *complete* separation of the active principle, either as such or in the form of one of its salts or derivatives, in an entirely pure form and quantitative determination by weight or chemical reaction. Such a theoretical result cannot practically be accomplished. It is unlikely that *exactly* the same sum total of conditions will exist for two different assays even in the inanimate factors involved.

Proximate methods of assay for active principles usually involve numerous steps, and each step is subject to many of these possibilities of error. There is also continually present the variable human factor of manipulation and application of the various steps of the assay process. In this we have the added possibility, or perhaps we may better say, series of possibilities of additional small factors of variation. For uniform results the procedure employed must be as exactly uniform as possible. In the development of an assay method it will become apparent that certain details of procedure are very essential and that in other details little cause for erroneous results is likely to be found. It follows that in the description of an assay process those details that are essential should be most carefully described,

but those which are non-essential should be omitted else the written statement of a method of assay becomes unduly cumbersome. Furthermore, to include a great number of details which are non-essential detracts greatly from proper emphasis upon those details which are essential.

One of the difficulties in the development of a method of proximate assay lies in the proper selection not only of chemical substances or solvents used but in the correct selection of those details of procedure which must be followed with meticulous care as being specific in that particular assay process, and those portions of the procedure which may be varied within a wide range, following intelligent application of general procedures by the properly trained analyst. In other words, an assay process doesn't need to be written out in its entirety in words of one syllable (supposing such technical language is available), but extreme care should be given to perfect clarity of expression and accuracy of detail in the writing out of each portion of the method, where variations in application may cause greater errors than would customarily be expected or those which are by no means obvious.

Because the personal factor may oftentimes greatly influence the accuracy of these types of assays, it is very essential that their development should be soundly based upon extensive co-operative assays by different individuals and in different laboratories, involving variations in procedure that may seem sometimes wholly innocuous. It is not uncommon to find that difference of results between two different men or different laboratories is finally traceable to some slight variation in application of the assay which did not at first seem to be an essential factor. Very rarely is a process of assay found to be generally applicable or in such condition that it can be adopted as a standard method in the form as first worked out by one man or even by the co-operation of several men in the same laboratory. Two or three men working upon a new assay method in the same laboratory may obtain concordant results for they will be working with similar apparatus and under similar conditions, but let the same method of assay be tried by another laboratory and quite different results may be obtained. This is not as surprising as it might seem for in the first laboratory the analysts were not only using similar types of apparatus and procedure but had the opportunity of determining the entire course of the assay by observation, whereas in the second

laboratory interpretation had to be entirely based upon the written word of the process.

All criticism of assay results, particularly upon new and relatively untried methods, may not necessarily be criticism of any individual's work but rather becomes a critical examination of the possible variations in interpretation of the written statement of the assay process. It is sometimes surprising to find that the description of a process which is quite obvious when one has once seen it in operation does not seem nearly so obvious when the only knowledge of it is to be gained from a written statement.

All our past experience serves to emphasize the very great necessity of widespread co-operative investigations of any new or modified methods of proximate assay in order that the variable factors may be reduced to a minimum which may at best amount to no inconsiderable and unavoidable inaccuracy.

So far, we have been considering certain of the general principles involved in the development of a single assay. Let us suppose, now, that we have two different methods of assay for comparison as to their usefulness for some specific purpose, and it is necessary to make a decision between them. At this point still other influencing factors must be considered. Among other things, these include questions regarding accuracy, time and cost. We need, first, then, to consider what is a reasonable and proper degree of accuracy which the method of assay must possess? How seriously will any such inaccuracy affect the medicinal properties of the finished preparation? If the processes are approximately equal in accuracy then it is obvious that if one of them can be carried out within a few hours or the total space of a single working day it is to be preferred to one that may not take any more actual working hours but requires two days for completion, or to one that requires a greater number of working hours in a single day for its accomplishment. If the procedure followed in one assay is less expensive than that of the other it also is naturally the one to be preferred, for if many assays of the same type may be required the cost factor may become quite an appreciable one. The time factor is sometimes more obvious than the cost factor alone, but more time necessarily involves greater cost and waste because that time must then be taken away from other assays which might be usefully carried out.

Let us further suppose that in these two assay processes we are considering, one of them is theoretically accurate to within 2 per cent.

but requires practically two days and a total of eight hours of actual work to complete. The other assay may be theoretically accurate to within 3 per cent. or 4 per cent. but can be completed within the space of a single day with perhaps only two hours of total work. It then becomes a matter of decision as to which of the two is preferable as a means of controlling the quality of a pharmacopœial preparation with an adequate degree of accuracy. Does greater accuracy more than compensate for the greater time and effort?

Not infrequently it may happen that a method which possesses certain obvious advantages as to time and cost may by careful co-operative work be developed to a higher degree of accuracy than originally appeared probable, and such study is always well worth while.

In the light of all of these considerations, there becomes more apparent the very great importance of many viewpoints centered upon a method of assay and the importance of not reaching decisions with respect to the incorporation in the U. S. Pharmacopœia of a specific procedure until every possible opportunity has been given to collect and unify, so far as possible, such different observations and opinions as have developed.

More and more during recent years these principles have been observed and applied in the development of pharmacopœial assays, and the progress that has been made in this manner should be continued and soundly developed.

Such useful co-operative work between the U. S. P. Revision Committee and the laboratories of colleges, research institutions, and those of the pharmaceutical industry, particularly as represented by the Combined Contact Committee of the American Drug Manufacturers Association and the American Pharmaceutical Manufacturers Association, can be still more helpful in the development of pharmacopœial standards dependent upon proximate assays.

I wish also at this time to offer for careful consideration the suggestion that some means be provided whereby new and modified methods of assay intended for incorporation as official standards in the U. S. Pharmacopœia might be accepted by the Revision Committee and published as "Tentative Methods of Assay," which would not have the positive official standing of finally adopted U. S. P. assays or standards. Opportunity of working with such proposed methods of assay over a period of time would permit thorough study under practical conditions of the advantages and disadvantages of the

assay methods and give greater assurance of the accuracy and usefulness of any new methods prior to their official inclusion in the Pharmacopœia. Such procedure, permitting extensive and adequate study under practical conditions of possible new methods, has been used with advantage by the Association of Official Agricultural Chemists for years, and some similar type of procedure for some U. S. P. assays would be of material help in avoiding difficulties that have sometimes in the past attended a rather too hasty adoption of an official method. Usually, in these cases, final action has been hurried because of the pressure imposed by a time limit for publication or other seemingly urgent conditions.

In summary, may I emphasize these things: (1) the importance of adequate and widespread co-operative work in the development of any new or modified methods of proximate assay, and (2) the desirability of finding some means to extend the scope and time of such co-operative studies by means of the acceptance and publication of "Tentative Methods of Assay" for an adequate time prior to their official inclusion in the U. S. Pharmacopœia.

"Science can exist without industry; it did so for hundreds of years. But industry cannot exist for five minutes without science. Invention and research are the very lifeblood of the industry that makes possible a civilized nation and, one might add, the collection of millions of pounds in taxes. This only too often is the attitude of the statesman. You may remember the story of Faraday's demonstration of his first primitive dynamo to, I think, Gladstone. 'Tell me, Mr. Faraday,' said the politician at last, 'what *use* is this apparatus.' 'Sir,' replied Faraday, 'I do not doubt that later you will be able to tax it.'" —A. M. Low in *Science in Industry* (Oxford Univ.).

ANIMAL AND REPTILE HOLDER

By Philip Schain

WE HAVE often witnessed the spectacle of the neophyte who attempts his first animal inoculation. The fear and difficulty with which the operation is performed would be amusing if it were not for the unfortunate results which often occur. The bite or scratch of a normal laboratory animal will not cause the beginner any great physical inconvenience but it may develop an attitude of uncertainty or fear which may affect appreciably the worker's future technic. The attention of laboratory workers, experienced or otherwise, is sufficiently taken up with the proper injection into a specified site of virulent organisms or other materials without being distracted by the struggle of the animal. Attention also is directed to the fact that accidents such as autoinfection and infection by diseased animals may and do occur even with experienced workers.

This apparatus was designed to fit the needs of individuals in two main categories: 1. Those who must or prefer to work unassisted and want to be assured of no inconvenience later.

2. Those receiving their initial training in handling laboratory animals and others who though assisted desire greater technical efficiency with subsequent ease of manipulation and personal safety.

In some instances the time-saving element may be of importance.

The holder is recommended primarily to grasp small laboratory animals such as mice, rats and guinea pigs, and also reptiles as snakes, etc., and to hold them securely for the purpose of inoculations, for operation and for necropsy. Varied sizes of holders as well as accompanying animal boards are provided to further facilitate these procedures.

The apparatus was produced and submitted in response to a suggestion by Dr. Louis Gershenfeld, Professor of Bacteriology at the Philadelphia College of Pharmacy and Science, as a preliminary aid in subsequent animal experimentation in a research problem by the author for his doctorate degree.

The device (Fig. 1) as shown by the drawings, consists essentially of a rod (b) which services as the shaft, one end of which is attached to the pistol handle (a) and the other end attached to a fork (Fig. 2) adjacent to the jaws.

The shaft (b) at the pistol handle end (a) is threaded for a knurled nut (c) which adjusts the tension of the spring (d) located on the same shaft and presses against a tube or sleeve (f) (also Fig. 3) sliding on and acting as a covering for the shaft. This tube or sleeve carries at the pistol handle (a) a trigger (e) and at the other end two bearings (g) (also Fig. 3) for the links (h) which act on the lever arms (i) of the jaws (1) (also Fig. 4).

The two-pronged fork (Fig. 2) has bored ends for the pin (j) which supports the jaws and is the fulcrum upon which they swing. This pin projects slightly beyond the outside of the prongs to guide and limit the motion of a stirrup (k) sliding longitudinally against the prongs. The jaws are semi-circular in shape and the tip of each one is adapted to receive and hold firmly an elastic member (m) such as a rubber band, which is stretched and kept in position within the jaws by the stirrup (k). Opening control members (n) located midway on each jaw maintain the two legs of the elastic member at a certain distance to provide a suitable opening for the animal or object to be seized, to which end these members (n) can be advanced or retracted by a screw nut adjustment.

The elastic member (m) is for the purpose of preventing injury to the animals or delicate objects to be seized and held by the pressure of the spring (d) pushing the jaws together and closing them, this pressure being regulated by the adjusting nut (c). As a further safeguard for that purpose, soft resilient pads or cushions (o) are attached to the very tip of the jaws, and the stirrup (k) that holds the elastic membrane is free to move away from the center of the opening and thus provide adequate resiliency when it comes in contact with the animal or object.

In using the holder, the power of the spring (d) having been adjusted for the purpose in view and the opening between the jaws regulated, the jaws are then opened (Fig. 6) by pulling the trigger (e) as the device is directed toward the animal or object to be seized. When the animal or object is within the compass of the jaws the trigger is released and the jaws, impelled by the spring, are allowed to close around the animal or object. Obviously, to release the animal or object, the trigger is pulled to open the jaws.

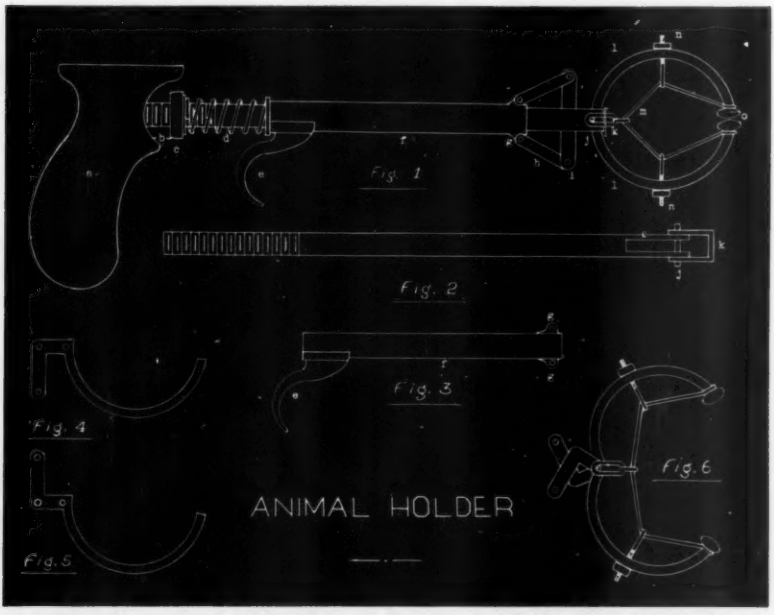
In such cases where it would be preferable to close the jaws by pulling the trigger, the lever arms (i) of the jaws are turned in the opposite direction as shown in Fig. 5 so that the tension of the spring

against the sleeve will maintain the open position of the jaws and pulling the trigger (e) will close them.

The apparatus is of value in the following considerations:

1. Ease of manipulation and efficiency of technic where assistance is not available.
2. Uniform grasping, immobilization and the avoidance of injury to the animal.
3. Personal safety of the operator and other attendants.
4. Conservation of personnel.
5. Instruction purposes.

The author is indebted to Mr. Theodore Mason for his advice and active technical assistance.



EXTENSION OF U. S. P. USE IN PAN-AMERICAN COUNTRIES*

By Amelia de Mesa Ponce

The United States Pharmacopœia is being used more frequently in the Pan-American countries. This is but one of the evidences of greater cooperation and friendship between the United States and her neighbor Republics. The reasons for the choice of our Pharmacopœia rather than other outstanding books of standards is interestingly described.

THE honor of being invited to present a paper on the use of the U. S. P. in Pan-American countries is fully appreciated. I will endeavor to give an idea of the utility and benefits we have derived from having adopted this standard in Cuba these past decades.

During the colonial regime the Pharmacopœia of Spain was very satisfactorily established in Cuba. Our Medical and Pharmaceutical students in large numbers received training in Spain and France, but as the social and commercial relations with the United States were deepened and strengthened, augmented possibly by the historical factor as well as the growth of American Industries, there loomed the possibility of breaking away from European influence and establishing contact with our American neighbor. I still remember from my student days the dimly understood but nevertheless bitter battles over whether the French Codex or the U. S. P. were the superior.

Perhaps our sister Republics have, at one time or another in the past, experienced this period of adjustment. I do believe that with the enormous differences and trends of the old Pharmacopœia and the differences of the old schools of medicine, any country going through this evolution must have found as did Cuba, that neither the one nor the other fulfilled completely the needs of the medical and pharmaceutical professions as well as the public needs. I am laying stress on this point purposely because I remember it was the all important axis of the discussion. Time has proved that it *could be* and *was* perfectly remedied by establishing a National Formulary which would, for the time being, fill the gap between the time honored preparations and the newly imposed standards. As the commercial relations and facilities in communication have brought our countries closer together, and in our special case, our independence and the proximity to the United States, there can be no doubt that, of its own

*Read at the Pre-Convention Conference of the United States Pharmacopœia, Washington, D. C.

accord, the gap above mentioned and differences due to traditions and customs are slowly being erased. The U. S. P. is now thoroughly and firmly rooted in Cuba: our institutions and centers of learning are slowly but undoubtedly tending to conform to United States models. Our students and teachers attend the American Institutions; the medical literature and the commercial propaganda all inexorably tend to obliterate what differences remain.

Before considering the making of a national Pharmacopœia let us glance at the U. S. P. from a scientific point of view. The decennial revisions in the past have kept the book fully abreast of medical progress and today when the tempo of the scientific progress of the medical and pharmaceutical sciences has quickened, the supplements have responded admirably to these increased responsibilities. The book contains a selected list of the most important therapeutic agents available, and of course future revisions and supplements make it possible to admit the new and delete the old, as necessity arises.

The U. S. P. standards are carefully and extensively tested before arriving at decisions. This work is carried on at many of the best equipped private laboratories of colleges and other institutions of learning and research, as well as in industrial and Government laboratories under the voluntary direction of specialists and experts in each branch of pharmaceutical activity. This alone would be very difficult to duplicate in any other country. Advisory boards have been established whenever the need arose. At the present moment extensive investigations are being carried on by the Advisory Boards on Vitamins, Anti-Anemia preparations, Endocrine and Hormones, etc., and here too the Pharmacopœia has had the voluntary cooperation of laboratories in the states and abroad. Could these same conditions be duplicated in any other country I would undoubtedly advocate the establishment of a national pharmacopœia. Each new revision brings the book nearer the desired goal of perfection. This is only possible through extensive research, whereby old methods of preparation, testing and assay are replaced by new and better ones. These factors, as well as the International Pharmaceutical relations begun at Brussels and now carried on at Geneva by the League of Nations where three hundred of the most important therapeutic agents commonly used throughout the entire world are being described and standardized, establish an indisputable trend toward uniformity and perfection.

Considered from the financial viewpoint, the cost of the U. S. Pharmacopœia is insignificant compared to the work accomplished. This has been made possible by the contributions of many laboratories and of scientists in all fields of work. The total amount for the last decade exceeded one hundred and seventy-two thousand dollars. A country planning to make its own Pharmacopœia and supplying the necessary scientific material and its directors would require many times the amount used by the U. S. P. unless it had at its disposal voluntary contributions of the nature described above.

Each new revision of a national Pharmacopœia must meet more exacting demands and higher standards. It must keep in harmony with the scientific progress and endeavor to establish uniform standards throughout the world thus facilitating and bettering international medical and pharmaceutical relations. Of course there will always be regional differences due to various local factors, but the majority of important medicines should be in agreement throughout the world. A most important factor is the drug supply available in a country. This is especially important in Pan-American countries. Will not the increasing commercial relations with the United States be justified not only in the form of a more profitable business but also tend to foster a closer scientific intercourse and a better understanding of our racial characteristics?

The teaching imparted at the universities and colleges in each country is another vital factor in retarding or accelerating this process of adaptation. The U. S. P. has been very useful in university teaching among pharmaceutical students. The identification tests of purity standards and assays are sufficiently strict to eliminate undesired impurities but not so complicated that it cannot be applied by a pharmaceutical graduate. In our teaching we continually refer to the methods recommended in the U. S. P. and find them workable and reliable.

It would be helpful in the effort to establish Pan-American uniformity if auxiliary committees could be formed in each country. Here any contribution or suggestion considered necessary and justified could be taken care of. This would further insure the adaptability and usefulness of the U. S. P. in Pan-American countries.

The Spanish translation of the last four editions has been a very important step in making the U. S. P. known in countries where Spanish is spoken. Our students have an opportunity to handle the book from the first year of their training. This chance to make its

acquaintance and test its usefulness from the very first helps them to develop a pride in their profession and their country and to look forward to the time when it may be their lot and privilege to participate in the work of revision through their Auxiliary Committee.

With the ever increasing facilities in communicaton between Pan-Amercan countries it is very convenient to obtain uniformity in titles, strengths and sutable standards of purity for medicinal substances. There can be no doubt that such a state of affairs would be of mutual benefit. Such an end can be helped by presenting the translation of the U. S. P. and following the broad and open armed policies that the U. S. P. Convention has followed for many years. This should also be a factor in opening mutually advantageous markets and in many other ways benefiting both the profession of medicine and pharmacy as well as the public in all of our countries. It will possibly mean higher standards of strength and purity for medicinal substances made available to the sick.

After several decades of having adopted the U. S. P. as the official medical authority, there is today no doubt that the standards are suitable to the need of our medical and pharmaceutical professions. With the help of an efficient board of health enforcing such standards, our public would be safely and adequately protected.

FOUNDER'S DAY ADDRESS
PHILADELPHIA COLLEGE OF PHARMACY AND SCIENCE

By Henry Butler Allen

Secretary and Director, The Franklin Institute

The Philadelphia College of Pharmacy and Science was founded in 1821, just three years before the Franklin Institute of Philadelphia. Dr. Allen draws attention to a quite interesting group of individuals (Bache, Wetherill, Brown, Morris, Smith, Troth, etc.), men outstanding in early Philadelphia life, who were instrumental in founding both of these scientific organizations. Many of these founders were themselves pharmacists and they were prompted in each instance by the same sincere desire to educate, train, and serve in the founding of these sister institutions.

UP UNTIL a very few years ago, I wondered why some of my older friends took so much interest in the history of institutions such as yours and mine. I thought that there was too much that is fascinating about what is being done today to take time for that which is dead and buried. But *I* now must confess a certain desire to look back into our forefathers' days, at some sacrifice of time for current matters. Old age is coming up on me, I guess.

One of my most vivid pictures of my own college events is how old some of our middle-aged speakers looked to me. I remember wondering how I would feel when I had been out as long as they. I now know—I don't feel nearly as old as those speakers then looked to me.

So, when I started to prepare for this occasion, my first move was to turn to a book in our library, "The First Century of the Philadelphia College of Pharmacy." I know something about what you are doing today. But I had that middle-aged urge to find out what you were doing in 1821—and compare it with my Franklin Institute which started only three years later.

I found, as I might suspect, from having lived as a boy in a New England town, that in the year 1830 a drug store might sell "Dye stuffs; paints; dentists' and surgeons' instruments; shop furniture; spices; perfumery; astral and brass hanging lamps; tapers; sperm oil."

And I also found that the founders of your College were concerned with taking the drugs out of the general store and placing them

in a shop for them alone; today we seemed concerned with taking everything out of every store and placing it in the drugstore!!

Perhaps I am too literal minded, so we'll forget the physical surroundings and talk about the actual fact: that drugs *are* sold and that the College of Pharmacy has devoted one hundred and twenty years to the humanitarian task of seeing that knowledge and high ideals provide the background for such sales.

A brief survey of our country at the beginning of the nineteenth century will show that we were still fighting the Indians, but the War of 1812 had put an end to any unity among the tribes. That war, and the Louisiana Purchase in 1807, together with various expeditions, had opened up new realms; people were rushing westward for more land in such large numbers that it became known as the "Great Migration." The States farthest west were Illinois in the north and Louisiana in the south. Florida and Michigan were still territories. There was population farther west and north and south, but not sufficient to form States, and the majority of American citizens were satisfied that the far west was the "great American desert," impossible to cultivate —so they gave it to the Indians, *forever!!*

Canals were becoming the panacea for transportation, with stage coaches and Conestoga wagons as means of personal travel. Railroads were not yet thought of as a means of communication between distant points. Families were large and formed the unit of society. Midwives brought the new generations into this world and practically all medical care depended upon the housewife. In the East, civilization as we know it today, was rapidly developing, but as population moved westward the frontiersmen depended upon the simple methods of earlier days.

The following is an account of medical knowledge on the frontier about the time of the founding of the College of Pharmacy. The description is by an historian:

> "One of the most unsatisfactory conditions in frontier life was the lack of medical facilities. During the first quarter of the nineteenth century there were very few adequately trained doctors west of the mountains. Competent physicians preferred to remain in the East rather than to embrace the poorly paid and hard working life which was inevitable farther west. Western medical practice included riding many miles over atrocious roads, day and night, in good weather and bad, to serve a widely scattered and poor population. Good hospitals did not exist and medical schools and publications were rare."

"The earliest form of medical treatment on the frontier was given by any individual who possessed even the simplest knowledge of drugs and surgery. Every educated man was supposed to be competent to treat disease, and each family had its own supply of simple herbs and drugs, such as calomel, jalap, and cinchona bark (containing quinine). The seventh son of a seventh son was presumed to have unusual healing powers, while early morning dew was supposed to be excellent for the complexion."

"The ministrations of the early pioneer doctor were but little better than those of kind friends, for such a practitioner ordinarily had but little formal education and learned his trade from his predecessors and by experience. His equipment which he carried in his saddle bags, consisted of a few simple drugs, roots, herbs, calomel, a lancet, cupping glasses, and possibly a few other crude surgical instruments and a supply of leeches. He compounded all his own medicines, for there were few drug stores; particularly bitter doses were concealed in an apple or piece of dough. . . ."

"Early medical methods produced results which were marvelous, not in the large number of fatalities, but in the comparative size of the group which remained alive!!"

The historian then noted that "After about 1820 the medical science west of the mountains gradually improved."

Scant attention was paid to human ills; and life and death, barring the Indians and the badmen, were regarded as an act of Providence. Property and politics held the spotlight, with the East becoming increasingly alarmed at the power wielded by the new States forming toward the West.

With such a market for the sale of drugs, it is small wonder the unscrupulous reaped the harvest.

Philadelphia in this exciting period was the leading city of the country—politically, commercially and culturally. Benjamin Franklin, who had died at the end of the preceding century, had established many institutions which were to bring lasting honor to him and fame to his adopted city: the American Philosophical Society, the University of Pennsylvania, the Pennsylvania Hospital. These concrete evidences of a great man, together with the inspiration of his writings, aided the men who came after him to achieve their ideals and to bring further glory to the little city founded by William Penn.

In 1821 was founded the College of Pharmacy; in 1824 The Franklin Institute was brought into being. It is interesting to note

the aims and ambitions *and* identity of the founders of each. Of the College of Pharmacy it has been said, it was founded largely by members of the Society of Friends, "with their homely virtues of modesty, thrift and wisdom, and love of peace and simple honor"; and today, in a pamphlet describing a group of Institute members known as "Friends of Franklin," we find this: "Franklin's is the greatest contribution of all. He will live again in the memorial which has been created, and his spirit will be communicated to successive generations. We need him to stimulate in American life the development of the Homely Virtues. He will remind us, year after year, that Honesty, Thrift, Industry and Respect for Law are essential to the well-being of the Republic."

The early history of both institutions is replete with the name of Bache: Alexander Dallas Bache was an outstanding member of The Franklin Institute, as was his cousin, Dr. Franklin Bache. It is well known, of course, that Franklin Bache was a teacher of chemistry at the Institute from 1826 to 1832, when he gave up that teaching presumably because of the press of work at the College of Pharmacy, where he was Professor of Chemistry from 1831 to 1841, and the Eastern Penitentiary, where he was physician from 1829 to 1836. He is one person mentioned in the early annals of both societies whose work in each contributed so importantly to the success of these young organizations. Charles Wetherill, one of your founders, is another, and like your institution, we today point with pride to the fact that we still have a Wetherill on our Board. There must have been others, however, for the greatest friendliness existed among all the cultural and educational groups of the time. In our own early list of members we find—

Frederick Brown	— Druggist
George W. Carpenter	— Chemist
Alfred Drake	— Druggist
Henry Ewing	— Apothecary
Charles Evans	— Druggist
John S. Hart	— Druggist
Isaac P. Morris	— Druggist
Daniel B. Smith	— Druggist
Henry Troth	— Druggist
Charles Wetherill	— Druggist

And the name of Dr. John R. Coxe, Professor of Materia Medica, the gentleman who figured so prominently in the story of the early history of your College. You will recall that it was through his efforts that the University of Pennsylvania undertook "to confer the degree of Master of Pharmacy upon the apothecaries of this city who were desirous of obtaining it and who would forward their claims to the Dean of the Faculty!" This decision was taken at the same time that your founders had decided that the standing of an apothecary in the community deserved a better rating.

We can learn much from our founders. The history of our institutions reflect the characters of the men who organized them and who through the years have brought to fruition the high ideals which caused your College and our Institute to be brought into being.

They were direct—our founders. They believed in the innate goodness of human nature, in the power of knowledge, in the great future which confronted their country.

I refer you to your own interesting history as presented in that enlightening volume, "The First Century of the Philadelphia College of Pharmacy," where you will find the early history, the establishment of a code of ethics, the realization that instruction should be given for practical use of the man in the drugstore, and finally the invocation of the law to uphold the high standards fostered by your College. Your work has been in the science of medicine.

The Franklin Institute was designed to bring to the masses the physical sciences and the promotion of the mechanic arts. A quotation from an address to the Freemen of Pennsylvania will show how thoroughly democratic the young Institute was: Peter A. Browne, in addressing the organization in June, 1825, said:

> "In the reception of members there should be great liberality, no public spirited man should be excluded from a participation, because he does not belong to the working classes; this would be a narrow policy, although unworthy of a high minded Pennsylvania Mechanic. On the contrary, such persons should be received with open arms; The Franklin Institute have many such members, who they have at all times received with pleasure, and will always continue to acknowledge with gratitude."

And as a plea for the future generations, Mr. Browne continued:

> "Let me entreat you then, my fellow citizens, as you value your own happiness, the future prospects of your offspring, and the prosperity and improvement of your state, to encourage scientific education. . . ."

It seems plausible that the great activity along democratic lines in education received its impetus from the writings and example of that great American citizen, Benjamin Franklin. He believed that the ultimate purpose of a man's education was service to his community. He sought always after useful knowledge but was never satisfied until he had passed it on, in one form or other, to his fellowmen. As a young man Franklin became a little cocky of his achievements and in conversation would make positive remarks. He soon found that argument availed nothing in imparting knowledge and took great care to break himself of any such habit. "Persons of good sense," he remarks, "seldom fall into (argument), except lawyers, university men, and men of all sorts that have been bred at Edinborough."

But he valued the expression of differences of opinion and founded the Junto with this very thing in mind, for the rules required "that every member, in his turn, should produce one or more queries on any point of morals, politics or natural philosophy, to be discuss'd by the company"; "Our debates were to be under the direction of a president, and to be conducted in the sincere spirit of inquiry after truth, without fondness for dispute or desire of victory . . ." He believed in education for the masses and used "Poor Richard's Almanack" as a "vehicle for conveying instruction among the common people, who bought scarcely any other books." Through this means he tried to inculcate industry and frugality as the means of procuring wealth and thereby securing virtue, for as he pointed out, "It is difficult for a man in want to act always honestly," or, as he says in Poor Richard, "It is hard for an empty sack to stand upright."

Franklin's own formal education as a child was very meagre, but he realized the value of training the young mind, and in his "Proposals Relating to the Education of Youth in Pennsylvania" he writes: "The history of Commerce, of the invention of arts, rise of manufactures, progress of trade, . . . with the reasons, causes, etc., may also be made entertaining to youth and will be useful to all. And this, with the accounts in other history of the prodigious force and effect of engines and machines used in war, will naturally introduce a desire to be instructed in mechanicks, and to be inform'd of the principles of that art by which weak men perform such wonders, labour is sav'd, manufactures expedited, etc. This will be the time to show them prints of antient and modern machines, to explain them, to let them be copied, and to give lectures in mechanical philosophy."

There in that paragraph Franklin recognized that science can be made the tool of war, but listen, carefully, I beg you, to what follows: "With the whole should be constantly inculcated and cultivated that benignity of mind which shows itself in searching for and seizing every opportunity to serve and to oblige; and is the foundation of what is called good breeding; highly useful to the possessor, and most agreeable to all.

"The idea of what is true merit should also be often presented to youth, explained and impressed on their minds, as consisting in an inclination joined with an ability to serve mankind, one's country, friends and family; which ability is (with the blessing of God) to be acquired or greatly increased by true learning; and should indeed be the great aim and end of all learning."

To Franklin the aim of all education was service—to make this world a better place to live in. He started as a very young man to occupy himself with public affairs and continued it throughout his lifetime. So industrious was he that at the age of forty-two he was able to retire from business. A long life was his reward for moderation in his way of living, so that he was able to give to his country forty-two more years of brilliant service.

When he was only sixteen he wrote: "It is undoubtedly the duty of all persons to serve the country they live in, according to their abilities . . . and I now take up a resolution to do for the future all that lies in my way for the service of my countrymen."

And seven years later he wrote: "There is no science, the study of which is more useful and commendable than the knowledge of the true interest of one's country; and perhaps there is no kind of learning more abstruse and intricate, more difficult to acquire in any degree of perfection than this, and therefore none more generally neglected. Hence it is, that we every day find men in conversation contending warmly on some point in politicks, which, altho' it may nearly concern them both, neither of them understand any more than they do each other."

The historians tell us that the beginning of the nineteenth century was a period of intense Nationalism in our country. Young men therefore were conscious of their destiny; of the things they personally must accomplish to add to the greatness which would become *their* country. It is reasonable to believe that Franklin's writings were widely read, that his Free Library was well patronized, that his Amer-

ican Philosophical Society provided a necessary stimulus in the way of lectures.

We *know* it was so, for your institution and mine were the products of those stirring times; and down through the years the Powers and the Weightmans, the Rosengartens and the Wetherills, to mention but a few names known in the annals of both organizations, have carried on so well the hopes and ambitions of the founders that today we can both point with pride to buildings which represent the tangible evidence that the people of today are still guided by Franklin's admonition, "It is undoubtedly the duty of all persons to serve the country they live in . . .." There Benjamin Franklin spoke to us all as citizens of America, and to you of the Philadelphia College of Pharmacy, who, through your work, are dedicated to alleviate the sufferings of mankind, he has a very special message, unhappily very pertinent to the times in which we live. It is this: "Since the foolish part of mankind will make wars from time to time with each other, not having sense enough otherwise to settle their differences, it certainly becomes the wiser part, who cannot prevent those wars, to alleviate as much as possible the calamities attending them. . . ."

We now see our fellow beings across the water and over our northern frontier engaged in another war. We ourselves might as well admit that we are in it, too—and only be prayerful that we can escape a full dose of its horrors. But we must be prepared, regardless of whether we get further in or not. And where do you students fit into the picture: You who are undergraduates should by all means finish out your studies—you are not needed now, anyway, and when you are, you will be many times more useful after you have completed your training.

As you know better than I do, this war is making use of new developments in your field and which were mostly hoped for in the last war. See what the new knowledge of vitamins is accomplishing. And, however much we shudder at the circumstances under which they are used—to stimulate more endurance in air pilots and to mitigate starvation from blockade and invasion—there is no escaping the fact that wars do speed our knowledge about medicines. They also stand ready to help the righteous cause to win, even though they can assist the aggressors to survive. But medicine can allay suffering, friend and foe alike, and it is our duty, therefore, to intensify our researches in times like these.

What about the future? There is no sense in trying to fool ourselves into believing that there won't be a severe reaction after this present crisis is passed. There will be a period when we will have to tighten up our belts—and it will be hard for all. But take the advice of a middle-aged fellow who has been through a good deal. Keep a stiff upper lip and never forget that others have been through worse times before—and that we have always survived in our country because we have maintained our fundamental principles of a free people, and our inheritance of rugged belief in truth, hard work, thrift and respect for law.

But, after the period of readjustment, we will go further into a wider life, with even greater discoveries of science and their application to the benefit of mankind.

OUR CONTRIBUTORS THIS MONTH

Henry Butler Allen, M. E., D. Sc., is director of the Franklin Institute of Philadelphia. A graduate of both Amherst College and Columbia University, Dr. Allen has, in addition to his affiliation with the Franklin Institute, long been a recognized authority in the metallurgy of steel.

Louis Gershenfeld, P. D., Ph. M., D. Sc., a frequent contributor to this Journal, is Professor of Bacteriology and Hygiene of the Philadelphia College of Pharmacy and Science; a member of the Sterile Products Advisory Board of the United States Pharmacopœia; Chairman, Clinical Laboratory Preparations Committee of the National Formulary; etc., and author of several outstanding texts in the fields of Bacteriology, Clinical Chemistry and Biological Products.

David Perlstein, M. Sc., a graduate assistant in the Department of Bacteriology of the College and co-author of other papers which this Journal has previously published.

Amelia de Mesa Ponce, Ph. D., M. Sc., is a graduate of the University of Havana and of the Philadelphia College of Pharmacy and Science where for several years she pursued graduate study and research. Now Professor of Pharmacy at the University of Havana she is actively interested in drug standardization in the Pan-American countries.

Philip Schain, M. Sc., is bacteriologist in the Department of Hospitals of New York and is now on leave of absence pursuing graduate work at the Philadelphia College of Pharmacy and Science.

Frank O. Taylor, Ph. C., is chief pharmacist of Parke, Davis & Co., Detroit, the chairman of the joint contact committee of both the American Drug Manufacturers Association and the American Pharmaceutical Manufacturers Association, and a member of the Committee of Revision of the United States Pharmacopœia.

RECENT ANNOUNCEMENTS BY THE REVISION COMMITTEE OF THE UNITED STATES PHARMACOPOEIA

AS a result of the shortage of cod liver oil due to war conditions the Pharmacopœia following the advice of the U. S. P. Vitamin Advisory Board has established specifications and standards for a solution of Vitamin A and D concentrates of natural source in an oil solution, the finished product to correspond in potency to a good grade Cod Liver Oil. In this manner a less expensive product will be available to the retail drug trade and to welfare groups, thus relieving the present shortage and trend to higher prices.

The title that has been given to this new product is

Oleovitamin A and D.

The recognition of this new product which is now official by interim revision has necessitated the change of title of two Second Supplement products, namely, Natural Vitamins A and D in Oil which is now:

Concentrated Oleovitamin A and D

and Activated Ergosterol in Oil which has been changed to

Synthetic Oleovitamin D.

The official U. S. P. interim announcement may be obtained from the office of the Chairman of the Revision Committee.

The U. S. P. Endocrine and Hormone Advisory Board is now engaged in a study to provide the necessary reference standards required by the proposal to admit in the new Pharmacopœia a number of hormone products. Substances under consideration are Estrone, Estradiol Benzoate, Progesterone, Androsterone, Testosterone, Chorionic Gonadotrophin, Adrenal Cortical Extract and Desoxycorticosterone Acetate.

In a second announcement pertaining to additions and deletions proposed for the U. S. P. XII the following lists were supplied. It should be noted that several proprietaries which do not appear in the list of additions will actually be adopted assuming that satisfactory agreements with those holding trademark or patent rights for such products can be made.

ARTICLES NOT FORMERLY PHARMACOPŒIAL NOW RECOMMENDED FOR THE U. S. P. XII

Absorbent Gauze
Absorbent Gauze, Sterile
Absorption Base for Ointments
Adhesive Absorbent Compress
Adhesive Plaster, Sterile
Aluminum Hydroxide and a Preparation
Antipneumococcus Serum (the new monograph to cover all types)
Blood, Whole
Bismuth Subsalicylate, Oil Suspension
Bromsulphthalein-Sodium
Calcium Mandelate
Carbarsone
Cortin
Dextrose Solution (for injection, 50%)
Dextrose (50%) and Sodium Chloride (30%) Solution (for injection)
Dilantin Sodium
Elixir of Phenobarbital
Epinephrine Hydrochloride Solution, 1:100
Ethyl Carbamate
Extract of Rice Polishings (Tikitiki) (Standardized for B_1 potency for use in the Philippines)
Ferrous Sulfate, Exsiccated
Gauze Bandage
Glycocoll (Amino Acetic Acid)
Halibut Liver Oil
Immune Serum for Scarlet Fever, Human
Immune Serum for Measles, Human
Immune Globulin (Placenta Extract), Human
Magnesium Trisilicate
Nicontinic Acid Amide
Ouabain
Picrotoxin
Picrotoxin Solution (for injection)
Potassium Chloride
Quinine Hydrochloride
Quinine Hydrochloride with Ethyl Carbamate Solution (for injection)
Radium
Riboflavin
Ringer's Solution
Serums, Dry and Liquid Forms Authorized for all U. S. P. Serums
Sodium Citrate Solution, Sterile
Soda Lime
Sulfarsphenamine
Surgical Silk and other Surgical Sutures
Surgical Silk and other Surgical Sutures, Sterilized
Syrup of Ammonium Mandelate
Syrup of Glycyrrhiza
Tablets of Aminopyrine
Tetanus Toxoid
Tetrachloroethylene
Theobromine with Sodium Acetate
Totaquinine
Transfusion Normal Plasma, Human
Transfusion Normal Serum, Human
Trichloroethylene
Urea
Vitamin A and D in Oil (Cod Liver Oil Strength)
Yeast (Standardized)

The following additional items, needed as "pharmaceutic necessities," must be added as new admissions:

Cudbear — Tincture of Cudbear

Footnote: The following therapeutically active substances or vehicles, or the ingredients needed for these, recently announced as additions to the U. S. P. XII have been reconsidered and will not be included:

Prepared Calamine
Calamine Lotion
Calamine Lotion, Phenolated
Compound Elixir of Cardamom
Iso-Alcoholic Elixir
Elixir of Terpin Hydrate
Gas Gangrene Antitoxin
Zinc Peroxide
Compound Spirit of Cardamom
Oil of Caraway
Oil of Cardamom
Raspberry Juice
Syrup of Raspberry
Oil of Bitter Almond
Spirit of Bitter Almond

ARTICLES OFFICIAL IN THE U. S. P. XI BUT NOT ADMITTED TO THE U. S. P. XII—COMMONLY SPOKEN OF AS "DELETIONS"

Acetyltannic Acid
Aconite
Acriflavine
Acriflavine Hydrochloride
Adhesive Plaster, Non-Sterile
Albumin Tannate
Ammonium Benzoate
Ammonium Bromide
Ammonium Salicylate
Aromatic Sulfuric Acid
Arsenic Triiodide
Asafetida
Bismuth Subgallate
Calcium Bromide
Calcium Creosotate
Cannabis
Cantharides
Cantharides Plaster
Capsicum
Carbromal
Cerate of Cantharides
Cinchona
Compound Mixture of Opium and Glycyrrhiza
Compound Powder of Senna
Compound Tincture of Cinchona
Copaiba
Creosote
Creosote Carbonate
Dichloramine-T
Diluted Acetic Acid
Diluted Solution of Sodium Hypochlorite (Dakin's Solution)
Elixir of Glycyrrhiza
Emulsion of Asafetida
Ethylhydrocupreine Hydrochloride
Extract of Cannabis
Extract of Nux Vomica
Fluidextract of Belladonna Root
Fluidextract of Cannabis
Guaiacol
Iodoform
Iron
Kino
Magma of Ferric Hydroxide
Mass of Mercury
Merbaphen
Nutgall
Nutgall Ointment
Oil of Santal
Paraffin
Pepsin
Pills of Aloe
Podophyllum
Potassium Chlorate
Powder of Ipecac and Opium
Pyrogallol
Quinine
Resin of Podophyllum
Santonin
Serpentaria
Sodium Acetate
Solution of Ammonium Acetate
Solution of Iron Chloride
Solution of Iron Tersulfate
Spirit of Chloroform
Spirit of Ethyl Nitrite
Squill
Strychnine Nitrate
Sulfonethylmethane
Syrup of Ferrous Iodide
Syrup of Squill
Terebene
Theobromine with Sodium Salicylate
Tincture of Aconite
Tincture of Cantharides
Tincture of Capsicum
Tincture of Ferric Chloride
Tincture of Kino
Tincture of Squill
Tincture of Valerian
Tincture of Veratrum Viride
Valerian
Veratrum Viride
Vinegar of Squill
Washed Sulfur
Yellow Mercurous Iodide

Footnote: This list includes additional items, recent deletions and all of the deletions previously announced except the following, which were reinstated as Pharmacopœial items at the recent meeting of the Scope Sub-Committee:

Activated Carbon
Colchicum Seed
Tincture of Colchicum Seed
Pancreatin
Pilocarpine Nitrate

ABSTRACTS SELECTED

From Current Literature of the Sciences Supporting Public Health

A Quantitative Bacteriological Investigation of the Tyndallisation Process. H. Davis. *Quart. J. Pharm. & Pharmacol. 13:* 14 (1940). In order to confirm qualitative findings previously published (Hillen, *Pharm. Weekbl., 61:*1245, (1924); Davis, *Quart. J. Pharm. & Pharmacol., 7:*379, (1934); *8:*683, (1935)), concerning the inadequacy of the Tyndallisation process as a means of sterilizing spore-contaminated solutions, Davis conducted quantitative tests of the method. Using a strain of Bacillus subtilis (S_2) and a strain of Clostridium welchii (904) as the test organisms he inoculated several media with different dilutions of the organisms before subjecting the material to the Tyndallisation process. In this way it was possible to observe quanitatively the behavior of the organisms and to select the most suitable media. As a result of this technique, nutrient agar with 0.5 per cent. of sodium taurocholate was chosen as the testing medium for B. subtilis and Fildes' Agar for Cl. welchii.

To test the efficacy of Tyndallisation as a means of sterilizing solutions of materials which might commonly be supplied in vials or ampuls, the following procedure was adopted: The substances were dissolved in distilled water, sterilized, and stored in vaccine bottles of neutral glass. The strengths of the solutions were those commonly used for parenteral injections. Each bottle contained approximately 20 mils of solution and was sealed with a rubber cap. They were contaminated by adding spore suspension to give about 5 million per mil. Counts were made before the first heating and after the first, second and third periods of one hour at 80 degrees C. The bottles were heated in a thermo-regulated electric oven and the temperature was read on a thermometer placed in 20 mils of normal saline in a container similar to those in use. The temperature fluctuations were ±2 degrees C.

A control of normal saline solution was included in each batch of four. Counts were made after varying periods of incubation, 18 and 42 hours at 37 degrees C. in most cases.

As a result of this test it was possible to divide the solutions into three groups—those in which there occurred little reduction in the number of spores, those that were moderately germicidal, and those which were strongly germicidal. In the first group were included the saline controls, calcium chloride, calcium gluconate and sodium thiosulfate. Procaine hydrochloride and morphine tartrate were moderately germicidal whereas cocaine hydrochloride, dextrose-saline, eserine salicylate, amylocaine hydrochloride, emetine hydrochloride, sodium chloride and acacia, morphine hydrochloride, sodium morrhuate and peptone were markedly germicidal. Tables are given showing the number of organisms which were counted at each stage of the procedure.

The Cl. welchii spores were less resistant than the B. subtilis but the grouping was similar with both organisms.

The author concludes that apparent Tyndallisation effects in hypodermic solutions are due to the germicidal action of the medicaments themselves. E. E. L.

"The Trend in Shave Products." *Soap, 17,* 30 (1941). A new shaving preparation consists of a stick of a chalky white substance which is used in a rather unique manner. The accompanying directions read as follows: "Wet your face with water, hot or cold. Spread (not rub) a thin film of the block over your beard. Leave it on for one-half minute. Then wash it off completely and shave while the face is still wet."

The product is described by its manufacturers as "The Oxygen Shave" and is said to work on "oxygen-action" whereby oxygen is drawn to the hair bulb by capillary action and forms a film which is supposed to let the blade cut clean without dragging. A mysterious principle indeed! The product is styptic and astringent and, it is reported, was introduced from Germany about a year ago. One block sells for 50 cents and is said to last for three months. It has not been advertised widely but the manufacturer has announced intentions of beginning to advertise nationally in the next few months. B. W.

"Are Soaps Germicidal?" Klarmann and Shternov. *Soap 17,* 23 (1941). The results obtained with pure soaps allow direct conclusions to be drawn as to the antibacterial action of different soaps, of

which they are constituents. Moreover, a number of papers dealing with bacteriological experiments on such soaps, show indisputably their bactericidal efficacy against pathogenic organisms; it is submitted that this experimental evidence lifts the soaps from the class of mere adjuncts to cleanliness and imparts to them a definite hygienic value. Nevertheless, a number of researches demonstrate conclusively that certain important pathogenic micro-organisms, or rather the more resistant individuals among them, are not likely to succumb to the antibacterial action of soaps under the customary conditions of use; therefore, soaps cannot and should not take the place of disinfectants and antiseptics. B. W.

The Use of Histamine in the Treatment of Specific Types of Headaches. B. T. Horton. *J. A. M. A. 116,* 5 (1941). The author describes a new syndrome of vascular headache known as "histamine cephalgia" and its response to histamine therapy. Attacks of histamine cephalgia—a unilateral headache—are of short duration, generally lasting less than an hour; commencing and terminating suddenly, they may awaken the patient one or two hours after he has gone to sleep and are frequently eased by sitting up or standing erect. Pain of a constant, excruciating nature which involves the eye, temple, neck and face is an outstanding complaint together with profuse watering and congestion of the eye, stuffiness of the nostrils, increased surface temperature and often swelling of the temporal vessels of the involved side of the head. In many cases pain occurred with clock-like regularity at night, although pain during the waking hours was not uncommon. The use of alcoholic beverages precipitated the attacks in a number of cases. Of the 184 patients under observation 72 were considered to be cases of histaminic cephalgia, the symptoms had been present for a period from two months to thirty-five years. In 35 of the 72 cases typical attacks of the unilateral pain was induced by subcutaneous injections of 0.1 to 1.2 mg. of histamine, the patients being unable to distinguish between the induced and the spontaneous attacks, as the two seemed to be identical. It was not possible to induce attacks in normal persons.

In the treatment with histamine diphosphate the patients were desensitized by increasing doses administered subcutaneously, the injections being administered twice daily for ten days to three weeks.

After the patient was freed from the attacks a maintenance dose of approximately 0.275 mg. of histamine diphosphate was administered once to three times weekly.

In 48 of 51 typical cases complete relief was obtained for various periods after desensitization; of these 27 considered themselves perfectly well. In 18 cases the attacks were less severe and less frequent than formerly. Excellent results were also obtained when histaminase was used on a small number of patients. The author concludes—"the spectacular manner in which patients respond indicates that histamine treatment is as specific for this syndrome as insulin is in diabetes mellitus." H. P. F.

The Effect on Bacteria of Substances in Use for the Preparation of Solutions for Parenteral Administration. H. Davis. *Quart. J. Pharm. & Pharmacol., 13*:32 (1940). In this study, Davis has investigated the germicidal action of parenteral solutions on Staphylococcus aureus and Streptococcus pyogenes at room temperature and the like action of certain preservatives on watery suspensions of Staphylococcus aureus. A majority of the parenteral solutions were shown to possess either slight or moderate germicidal power; a few were strongly germicidal. In the latter group were the following: atropine sulfate, diamorphine hydrochloride, cocaine hydrochloride, emetine hdrochloride, ephedrine hydrochloride, caffeine and sodium benzoate, eserine salicylate, sodium morrhuate and procaine hydrochloride.

With few exceptions, the grouping according to germicidal power at room temperature parallels that found in Tyndallisation experiments by Davis (see first abstract). Solutions which showed marked germicidal activity with spores generally proved to be germicidal to Staphylococcus aureus and Streptococcus pyogenes.

The study of the germicidal powers of suggested preservatives disclosed the following order of decreasing germicidal activity: 0.001 per cent. phenyl mercuric nitrate, 0.5 per cent. chlorbutanol, 0.05 per cent. parachlorometacresol, 0.5 per cent. phenol, 5 parts per million copper sulfate, and 0.2 per cent. methyl parahydroxybenzoate.

E. E. L.

The Colorimetric Determination of Strychnine in Nux Vomica and Its Preparations. J. Allen and Noel L. Allport. *Quart. J. Pharm. & Pharmacol., 13,* 252 (1940). Methods usually employed for the assay of nux vomica involve the extraction of the drug which occupies several hours followed by a complicated procedure for the isolation of the total alkaloids and finally a separation of the strychnine from the brucine by selective nitration. In 1930 Francois (*Bull. soc. pharm. Bordeaux 68,* 159 (1930)) published a colorimetric assay of nux vomica employing Denigès modification of Malaquin's color test for strychnine. While this colorimetric test is quite satisfactory when applied to solutions of pure strychnine salts the test is greatly altered by the presence of brucine which also produces color. In addition, the method advocated by Francois for the extraction of powdered nux vomica seed was found to be inadequate since trials showed that less than a quarter of the total alkaloids present was removed.

Following certain indications reported by other authors it was found that strychnine could be quantitatively precipitated as ferrocyanide in the presence of oxalic acid and followed by momentary freezing. The strychnine ferrocyanide was then isolated washed by centrifuging and after dissolving in hydrochloric acid a quantitative colorimetric determination carried out on an aliquot portion. By this modification brucine even when present in the ratio 4:1 does not influence the results. The intensity of color was compared with standards containing pure strychnine sulfate similarly treated and compared with the unknowns in a Lovibond tintometer.

The extraction of the alkaloids from nux vomica was also investigated. Due to the sensitivity of the test only 1 gm. of powdered seed is necessary. After considerable trial the best method found consisted in treating the drug with a little alcohol and piperazine and treating the mixture with boiling tetrachlorethylene for 15 minutes then percolating with the same solvent. In this manner the alkaloids from 1 gm. can be quanitatively extracted in about half an hour. The assay is then completed by shaking the percolate with N/8 sulfuric acid allowing to separate, filtering a portion of the acid layer and determining the amount of strychnine therein by precipitating as ferrocyanide and applying the colorimetric test. The liquid galenical preparations can be satisfactorily extracted by mixing with ether-washed sawdust and a little alcoholic solution of potassium hydroxide then

percolating with hot chloroform. Calcium phosphate frequently present in dry extract of nux vomica must first be removed or serious loss of alkaloids will result due to adsorption. This difficulty is overcome by treating the sample with dilute alcohol, removing the insoluble matter by centrifuging and then treating the supernatant liquor and washings in the manner described for liquid preparations.

The details of a miniature percolator of simple construction for extracting the samples is described and the complete method given in detail. Results using this procedure were quite excellent and comparable with those obtained by the official method. L. F. T.

Local Anesthetics Used in Dentistry. C. W. Freeman. *J. A. D. A. 28,* 100 (1941). In spite of the extensive research in this field the local anesthetic still most frequently employed today is basically the same as that recommended by Fischer about thirty years ago, namely, 2 per cent. procaine hydrochloride plus a small amount of vasoconstrictor and salts to make it isotonic. The author feels that none of the new agents are sufficiently superior to replace the general use of procaine.

Since the present theory with respect to the action of a local anesthetic postulates that it is dependent upon the solution of the free base in the lipoids the use of procaine borate whose pH is higher than the hydrochloride would appear of advantage. The results of Tainter, *et al.* (*J. A. D. A. 24,* 376 (1937)) indicating objections to the use of borate are questioned on several counts. A buffered solution of procaine borate which is not more than 1 pH unit from the pH of blood is recommended by the author. Most commercial preparations show a lower pH either to increase their stability or due to standing. The adjustment of the osmotic pressure to that of the blood is not considered necessary since in the author's opinion a 2 per cent. procaine borate which is hypotonic is quite satisfactory. Hypertonic solutions are considered objectionable. The inclusion of a small amount of vasoconstrictor is likewise favored. L. F. T.

SOLID EXTRACTS

Prepared for the readers of the American Journal of Pharmacy by the Editor and his staff

It is not often that this column quotes the writings of others "verbatim," but a current advertising squib for a tuberculosis camp free versifies as follows:

"Mary had a little cough . . .
Her Mother said it was from wet feet
Her Father said it was from cigarettes
Her Doctor said nothing—but
He ordered an X-Ray."

Clever, eh, what, or is it insidious? We think the former.

The fear complex, however, is something to be watched for and apprehended, if possible. Especially is this true in these days of medical examination for service in the Army and the Navy. Many are being rejected for trivial causes,—slight illnesses or defects never suspected by the examinee. It is important, therefore, that these minor deficiencies, which should not hamper civilian activities, be not worried into major maladies.

You never saw a pale pink cow, and you never hope to see one, but if you ever see milk from a cow fed phenothiazine, you'll surely think there is one. University of California experts have been administering this substance to horses and cows specifically as an anthelmintic, and effectively, too, but the bovine recipients of this modern medical aid have given, in return, a pink brand of milk which is not only distinctive in color but will remain in a warm room for several days without souring. There is no clinical report of what happens to people who drink this milk.

Speaking of animals, do you know what an epizootic is? In the old days in the drug store that was a jocular word bandied about to describe any strange and undiagnosable illness of man or beast. It really means an epidemic of sickness among horses, and is capitalized upon by a recent press release from the news bureau of the Railway Express Agency telling all and sundry that it (the Agency) was instrumental in sending to Argentina by air express 5000 doses of a new type of concentrated vaccine for equine encephalomyelitis. Add the miracles of modern medicine and time-saving transportation.

Hair-raising, but not particularly thrilling experiments are being conducted with pantothenic acid, for it is believed that this substance, or its salts, may encourage the growth of hair on pates that have long since bidden fond farewell to their last stray strands. It may be well to await the official returns from the scientific attempts at this feat before making any personalized efforts.

Another "quotable quote" (and thus we break precedent twice in the same month) is the comment of the editor of The New York Physician *that inasmuch as lactic acid has been found effective in increasing the proportion of female offspring in animals and that sodium bicarbonate increased the proportion of males, we need no longer say male and female, but "acid and alkali, created He them."*

A few cases of temporary myopia have followed the use of sulfanilamide, but this ill effect departs in time. Sulfathiazole has made some of its recipients quite nauseated, probably because of extra large dosage or conflicting medication. Yet, thank goodness, the sulfa-miracle drugs continue in their unprecedented march to fame and family health.

Vitamin D milk containing 600 U. S. P. units of Vitamin D to the quart has been refused eligibility to the list of accepted foods by the A. M. A. Council on Foods and Nutrition. The council, after much deliberation, could not be convinced that an accepted milk need have more than 400 U. S. P. Vitamin D units to the quart. In this case, it seems, enough is enough, and any more is superfluous.

Inositol, a new vitamin-like substance that prevents baldness in mice turns out to be a sugar-like compound known to chemists as inositol, Dr. Woolley of the Rockefeller Institute for Medical Research reports. Discovery of the vitamin was reported recently, but its chemical structure had not been determined at the time.

Inositol is a compound containing carbon, hydrogen and oxygen in the same proportions in which they exist in glucose and other simple sugars, but with the atoms differently arranged in the molecule. It occurs naturally in liver and other animal tissues, as well as in plants.

Are German Stuka streakers being drugged before the take-off, like horses before a race, to improve their performance? Persistent if still unconfirmed reports state that they are and that the reports are the subject of scientific investigation in this country.

The "pep" medicines used for this drugging are said to be ephedrine, familiar to asthma sufferers, and amphetamine or benzedrine, known as "pep pills" to students who take them before examinations on the false assumption that it increases their brain yield. Scientific comment on the report is that even if true, it is doubtful if the "pep" chemicals would produce the desired results.

But there is another new use for these "pep pellets." They are replacing thyroid and dinitrophenol as reducers of girth, and they do slenderize. Except—except—that they are just as dangerous as thyroid, and so upset the body rhythm that even when the drug is withdrawn the burning up and out continues.

Says Vernon Quinn in *Shrubs in the Garden and Their Legends.* Note, however, the exact meaning of the word "legend"!!!

"All the tribes in the East made a decoction of dogwood bark to give warriors fevered with battle wounds. The early colonists who settled among them, from New England all the way southward, fell easy prey to malaria, and they tried this Indian medicine and were amazed by its quick and excellent results. They could not know, as we do today, that dogwood barks contains precisely the same substance which is so valuable in cinchona bark, the source of quinine."

Which is an ambiguously deft way of handling a legend!